

App. No. 10/010537
Office Action Dated February 3, 2004
Amd. Dated April 28, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions and listing of claims in the application.

Claims 69-71 and 73 are amended.

Claims 10, 15 and 22-68 are canceled without prejudice or disclaimer.

Listing of Claims:

1-7 (Canceled)

8. (Previously Presented) The liquid crystal alignment film according to claim 69, wherein the molecules constituting the film contain carbon chains or siloxane bond chains.

9. (Previously Presented) The liquid crystal alignment film according to claim 8, wherein a carbon of a part of the carbon chain has an optical activity.

10. (Canceled)

11. (Previously Presented) The liquid crystal alignment film according to claim 69, wherein the molecules constituting the film are formed by mixing a plurality of types of chemisorption molecules having different molecular lengths, and the fixed film has concavities and convexities at a molecular length level.

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12. (Canceled)

13. (Previously Presented) The liquid crystal alignment film according to claim 70, wherein a plurality of types of silane-based surfactants, each having a different critical surface energy, are mixed and used as the molecules constituting the film, and the fixed film is controlled so as to have a desired critical surface energy.

14. (Previously Presented) The liquid crystal alignment film according to claim 70, wherein the functional group for controlling the surface energy is at least one organic group selected from the group consisting of a carbon trifluoride group ($-\text{CF}_3$), a methyl group ($-\text{CH}_3$), a vinyl group ($-\text{CH}=\text{CH}_2$), an allyl group ($-\text{CH}=\text{CH}-$), an acetylene group (triple bonds of carbon - carbon), a phenyl group ($-\text{C}_6\text{H}_5$), an aryl group ($-\text{CH}_6\text{H}_4-$), a halogen atom, an alkoxy group ($-\text{OR}$; R represents an alkyl group), a cyano group ($-\text{CN}$), an amino group ($-\text{NH}_2$), a hydroxyl group ($-\text{OH}$), a carbonyl group ($=\text{CO}$), an ester group ($-\text{COO}-$) and a carboxyl group ($-\text{COOH}$).

15-16 (Canceled)

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17. (Previously Presented) The liquid crystal alignment film according to claim 71, wherein the energy beam sensitive groups and the thermoreactive groups are introduced as side chain groups in the resin film.
18. (Previously Presented) The liquid crystal alignment film according to claim 71, wherein the energy beam sensitive groups, the thermoreactive groups and hydrocarbon groups are introduced as side chain groups in the resin film.
19. (Previously Presented) The liquid crystal alignment film according to claim 71, wherein the surface of the resin film has striped concavities and convexities.
20. (Previously Presented) The liquid crystal alignment film according to claim 71, wherein the thermoreactive groups are reacted and crosslinked.
- 21-68 (Canceled)
69. (Currently Amended) A liquid crystal alignment member suitable for use in a liquid crystal display, comprising:
a substrate having a first surface and electrodes;

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a monomolecular film formed on the first surface of the substrate, the monomolecular film being formed of molecules that have one portion bonded to the substrate by a covalent bond and are aligned uniformly in a specific direction wherein the bonded molecules in the monomolecular film are aligned by washing the molecules with a solvent after being bonded to the substrate and tilting the substrate in a desired direction to drain off the solvent[.];
wherein the molecules constituting the film have Si at both ends.

70. (Currently Amended) A liquid crystal alignment member suitable for use in a liquid crystal display, comprising:

a substrate having a first surface and electrodes;

a monomolecular film formed on the first surface of the substrate, the monomolecular film being formed of molecules having a carbon chain or a siloxane bond chain, wherein at least part of the carbon chain or the siloxane bond chain includes a functional group for controlling a surface energy of the film, the film having a critical surface energy that is from 15 mN/m to 56 mN/m[.];

wherein the molecules constituting the film contain Si at the terminals.

71. (Currently Amended) A liquid crystal alignment member suitable for use in a liquid crystal display, comprising:

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a substrate having a first surface and electrodes;

a resin film formed on the substrate, formed from a material having an energy beam sensitive group and a thermoreactive group, wherein the energy beam sensitive groups are reacted and crosslinked[.];

wherein the molecules constituting the film contain Si at the terminals.

72. (Previously Presented) A liquid crystal alignment member according to claim 71, wherein the resin film is formed directly on the electrodes.

73. (Currently Amended) A liquid crystal alignment member according to claim 71, wherein ~~the substrate comprises~~ a film is provided between the resin film and the electrodes.